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DRAWN BY: J.W. MANN

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LEGEND

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SITE PLAN

### STATE OF NORTH CAROLINA

### DEPARTMENT OF TRANSPORTATION

### **DIVISION OF HIGHWAYS** GEOTECHNICAL UNIT

# **STRUCTURE** SUBSURFACE INVESTIGATION

STATE PROJECT <u>3324</u> . F.A. PROJECT <u><b>BRZ-13</b>0</u>	
	05 (2)
COUNTY <b>SWAIN</b>	
PROJECT DESCRIPTION	BRIDGE NO. 106
ON SR-1309 OVER	
SITE DESCRIPTION	

#### **CAUTION NOTICE**

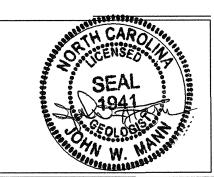
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VAROUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY ERREVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL UNIT @ (919) 250-4088, NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORNGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE, THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD.

THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE
INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HUSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL M.M. HAGER INVESTIGATED BY J.W. MANN D.O. CHEEK W.D. FRYE CHECKED BY\_\_\_ SUBMITTED BY W.D. FRYE L.A. LANKFORD R.D. CHILDERS 05/26/05



NOTE - THE INCORMATION CONTAINED HEREIN IS NOT IMPLIED OR CHARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS. SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

#### NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

#### DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

### SUBSURFACE INVESTIGATION

	SOIL AND ROCK LEGEND TERM	IS, SYMBOLS, AND ABBREVIATIONS	
COLL PEOCONATION	·		
SOIL DESCRIPTION	GRADATION  WELL GRADED- INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE	ROCK DESCRIPTION  HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL, AN INFERRED	TERMS AND DEFINITIONS
XXIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN	UNIFORM- INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)	ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.  SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.	ALLUYIUM (ALLUY.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.  ADUJFER - A WATER BEARING FORMATION OR STRATA.
00 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO 1206, ASTM D-1586), SOIL LASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE:	GAP-GRADED INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.  ANGULARITY OF GRAINS	IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH IS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS; ANGULAR,	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS,
VERY STIFF, GRAY SILTY CLAY, MOST WITH INTERBEDOED FINE SAND LATERS, HIGHLY PLUSTIC, A-7-6	SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED ROCK (WR) PER FOOT.	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.  ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION	The same of the sa	AT WHICH IS IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
DENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS (195% PASSING *200) (185% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	CRYSTALLINE ROCK (CR)  FINE 10 CUARSE BRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD STEED SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	CALCAREDUS (CALC,) - SDILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE,
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YELLD SPT REFUSAL IF TESTED, ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-6 A-3 A-6, A-7	SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30  MODERATELY COMPRESSIBLE LIQUID LIMIT 31-50	ROCK (NCR)  SEDIMENTAL WOOLD FELL PROSEL IN TESTED. ROCK TIPE  INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.  COASTAL PLAIN  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	OF SLOPE.
SYMBOL 8000000000000000000000000000000000000	HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	SEDIMENTARY ROCK SEDIME	<u>CORE RECOVERY (REC.)</u> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
PASSING GRANULAR SILT- MUCK,	PERCENTAGE OF MATERIAL  GRANULAR SILT- CLAY	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
40 39 MX58 MX51 MN SOILS     15 MX 25 MX96 MX35 MX35 MX35 MX36 MN36 MN36 MN36 MN36 MN      200 15 MX 25 MX96 MX 35 MX35 MX35 MX36 MN36 MN36 MN36 MN36 MN	URGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.  DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%  LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	HAMMER IF CRYSTALLINE.	HORIZONTAL.
AND LIMIT 40 MX41 MN 40 MX41 MN 40 MX41 MN 40 MX41 MN 50ILS WITH ASTIC INDEX 6 MX N.P. 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN LITTLE OR HIGHLY	MODERATELY ORGANIC   5 - 10%   12 - 20%   SOME   20 - 35%   HIGHLY ORGANIC   >10%   >20%   HIGHLY   35% AND ABOVE	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V.SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	<u>DIP DIRECTION (DIP AZIMUTH) -</u> THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX No MX MODERATE DRGANIC		OF A CRYSTALLINE NATURE.  SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
SUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY ORGANIC	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING.	(SLI,) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
THAJOR GRAVEL AND SAND GRAVEL AND SAND SOILS SOILS MATTER	STATIC WATER LEVEL AFTER 24 HOURS.	CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS, MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS, IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
EN RATING AS A EXCELLENT TO GOOD FAIR TO POOR FAIR TO POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA	(MOD,) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
SUBGRADE POOR	SPRING OR SEEPAGE	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.	FLOOD PLAIN (F.P.) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
P.I. OF A-7-5 ≤ L.L 30 : P.I. OF A-7-6 > L.L 30 CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH	THE STREAM.  FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
COMPACTNICES OF RANGE OF STANDARD RANGE OF UNCONFINED		(MOD, SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.	THE FIELD.
PRIMARY SOIL TYPE COMPACTNESS OF CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (N-VALUE) (TONS/FT2)	ROADWAY EMBANKMENT SPY CPT DATE TEST BORING SAMPLE WITH SOIL DESCRIPTION DESIGNATIONS	IF TESTED, WOULD YIELD SPT REFUSAL  SEVERE ALL ROCKB EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
GENERALLY VERY LODGE 4	SOIL SYMBOL AUGER BORING S- BULK SAMPLE	(SEV.) IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
GRANULAR MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL OTHER THAN \$55- SPLIT SPOON	EXTENT. 90ME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.  IF TESTED, YIELDS SPT N VALUES > 100 BPF	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE >50	ROADWAY EMBANKMENTS - CURE BORING SAMPLE	VERY SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERY SOFT <2 <0.25	ST- SHELBY TUBE  ST- SHELBY TUBE  MONITORING WELL  SAMPLE	(V, SEV.)  THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
GENERALLY SOFT 2 TO 4 0.25 TO 0.5	SIEITE INFERRED ROCK LINE  A PIEZOMETER  RS- ROCK SAMPLE	VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, YIELDS SPT N VALUES &lt; 100 BPF</u>	INTERVENING IMPERVIOUS STRATUM.
MATERIAL STIFF 8 TO 15 1 TO 2	TTTTT ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS	RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4	SLOPE INDICATOR TRIAXIAL SAMPLE  25/825 DIP/DIP DIRECTION OF INSTALLATION CRR - CRR SAMPLE	ALSO AN EXAMPLE.	ROCK QUALITY DESIGNATION (R.O.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND
TEXTURE OR GRAIN SIZE	ROCK STRUCTURES	ROCK HARDNESS	EXPRESSED AS A PERCENTAGE.
.S. STD. SIEVE SIZE 4 10 40 60 200 270	→ SPT N-VALUE  → - SOUNDING ROD  REF) — SPT REFUSAL	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGISTS PICK.	SAPROLITE (SAP.) - RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
PENING (MM) 4.76 2.0 0.42 0.25 0.075 0.053	ABBREVIATIONS	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	AR - AUGER REFUSAL PMT - PRESSUREMETER TEST	TO DETACH HAND SPECIMEN.	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS
(BLDR.) (COB.) (GR.) (CSE. SD.) (F. SD.) (SL.) (CL.)	BT - BORING TERMINATED SD SAND, SANDY	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE HARD EXCAVATED BY HARD BLOW OF A GEOLOGISTS PICK, HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12' 3'	CL CLAY SL SILT, SILTY CPT - CONE PENETRATION TEST SLI SLIGHTLY	BY MODERATE BLOWS.	SLIP PLANE.  STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR B.P.F.) OF
SOIL MOISTURE - CORRELATION OF TERMS	CSE COARSE TCR - TRICONE REFUSAL DMT - DILATOMETER TEST	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.  CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH
SOIL MOISTURE SCALE FIELD MOISTURE CHIDE FOR FIELD MOISTURE DESCRIPTION	DPT - DYNAMIC PENETRATION TEST 7 - UNIT WEIGHT	POINT OF A GEOLOGISTS PICK.  SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK, CAN BE EXCAVATED IN FRAGMENTS	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS LESS THAN 0.1 FOOT PENETRATION WITH 60 BLOWS.
(ATTERBERG LIMITS) DESCRIPTION GOIDE TON TIED FROM TON	F FINE W - MOISTURE CONTENT	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SRECJ - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY  (SAT.) FROM BELOW THE GROUND WATER TABLE	FOSS FOSSILIFEROUS V VERY FRAC FRACTURED VST - VANE SHEAR TEST	PIECES CAN BE BROKEN BY FINGER PRESSURE.  VERY  CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES I INCH	STRATA ROCK QUALITY DESIGNATION (S.R.O.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY:
LL_ LIOUID LIMIT	FRAGS FRAGMENTS MED MEDIUM	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
ASTIC   SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	FINGERNAIL. FRACTURE SPACING BEDDING	TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(PI) PL PLASTIC LIMIT		TERM SPACING TERM THICKNESS	BENCH MARK: BM #3 -L- STA, 17+02 ~132' RT.:
OMOPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DALE UNITS	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED > 4 FEET	8" NAIL IN BASE OF IO" SYCAMORE TREE
SL SHRINKAGE LIMIT	MOBILE B- CLAY BITS	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	ELEVATION: 1795.02'
- DRY - (D) ATTAIN OPTIMIEM MOISTING	6* CONTINUOUS FLIGHT AUGER CORE SIZE:	CLOSE 0.16 TO 1 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	NOTES:
HITHIN OF TIMOS FIGURE	B HOLLOW HODERS	INDURATION < 0.008 FEET	
PLASTICITY  PLASTICITY INDEX (B)  PDV CTREACTU	HARD FACED FINGER BITS X -N XWL	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
PLASTICITY INDEX (PI) DRY STRENGTH IONPLASTIC 0-5 VERY LOW	TUNG,-CARBIDE INSERTS -H	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS:	
OW PLASTICITY 6-15 SLIGHT	A CASING A W/ ADVANCER HAND TOOLS:	GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
IED. PLASTICITY 16-25 MEDIUM IIGH PLASTICITY 26 OR MORE HIGH	PORTABLE HOIST TRICONE STEEL TEETH POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	OTHER TRICONE TUNG, CARB, HAND AUGER	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL-BRN, BLUE-GRAY)	CORE BIT SOUNDING ROD	INDURATED ORGAN SIZE DIFFICULT TO BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	OTHER OTHER OTHER	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	
		SHILLE DICHAN COUNTY CHANGE	

STATE PROJECT NO. SHEET NO. TOTAL SHEETS
33241.1.1 2 13

ID B-3701



## STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 2, 2005

STATE PROJECT:

33241.1.1 (B-3701)

F. A. PROJECT:

BRZ-1309(2)

COUNTY:

Swain

DESCRIPTION:

Bridge No. 106 on SR-1303 over Alarka Creek

SUBJECT:

Geotechnical Report – Foundation Investigation

#### **Site Description**

This project is located in central Swain County approximately six miles southwest of Bryson City between SR-1303 and SR-1308. Existing Bridge No. 106 is to be replaced with a 100 foot single-span structure constructed on a 140 degree skew. The proposed bridge is to be located approximately 80 feet upstream from the present crossing.

The subsurface investigation was completed with the use of a CME-45C track drill equipped with NXWL rock coring apparatus and automatic hammer for Standard Penetration Testing. Both soil and rock core specimens were collected and analyzed.

#### Physiography and Geology

The project area is located in a rural area of the Blue Ridge Belt of the Mountain Physiographic Province. The topography of the area is steep with local relief approaching 200 feet. Alarka Creek is incised in its bed and has developed a minimal floodplain. Normal water flow at the site is approximately one foot in depth.

The area is situated in a thrust fault window which lies unconformably upon younger rock units. Locally, retrieved core specimens revealed the rock to be of granitic gneiss composition with varying degrees of mylonitization. This rock has a phyllitic texture due to its proximity to the thrust fault.

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TELEPHONE: 919-250-4088 FAX: 919-250-4237

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LOCATION: CENTURY CENTER COMPLEX BUILDING B 1020 BIRCH RIDGE DRIVE RALEIGH NC 27610

#### **Foundation Materials**

Colluvium, embankment, alluvium, and hard rock comprise the foundation materials encountered in the test borings conducted at the site. The colluvium is confined to End Bent One. Embankment has only been placed at End Bent Two. Alluvial deposits over hard rock are present at both bent locations.

#### End Bent One

Colluvial boulders and gravel 4.5 feet thick has migrated upon alluvial beds at this bent. The alluvium consists of medium dense to very dense brown-gray sand and gravel, lying between 4.5 to 9.3 feet beneath the ground surface. The alluvium has been deposited upon hard rock at approximate elevation 1771 feet. Recovered rock is slightly weathered to fresh, hard, with close to moderately close fracture spacing. Average recovery values are 94 percent. RQD values yielded an average of 78 percent.

#### End Bent Two

Eight feet of embankment consisting of loose to medium dense silty sand and gravel has been placed upon alluvial soils at this locale. The alluvial soils are very loose to loose sand, gravel, and cobbles with boulders occurring sporadically along the proposed bent. The alluvial horizon was found between seven and seventeen feet beneath the existing ground surface. Hard rock was encountered beneath the alluvium at elevation 1775±. Core specimens revealed fresh, hard, granitic gneiss with wide fracture spacing. Both recoveries and rock quality designation values averaged 99 percent.

#### Groundwater

Groundwater was measured in borings EB1-A and EB2-B in the alluvial horizons. The top of the water surface was found between elevations 1776± and 1778 feet.

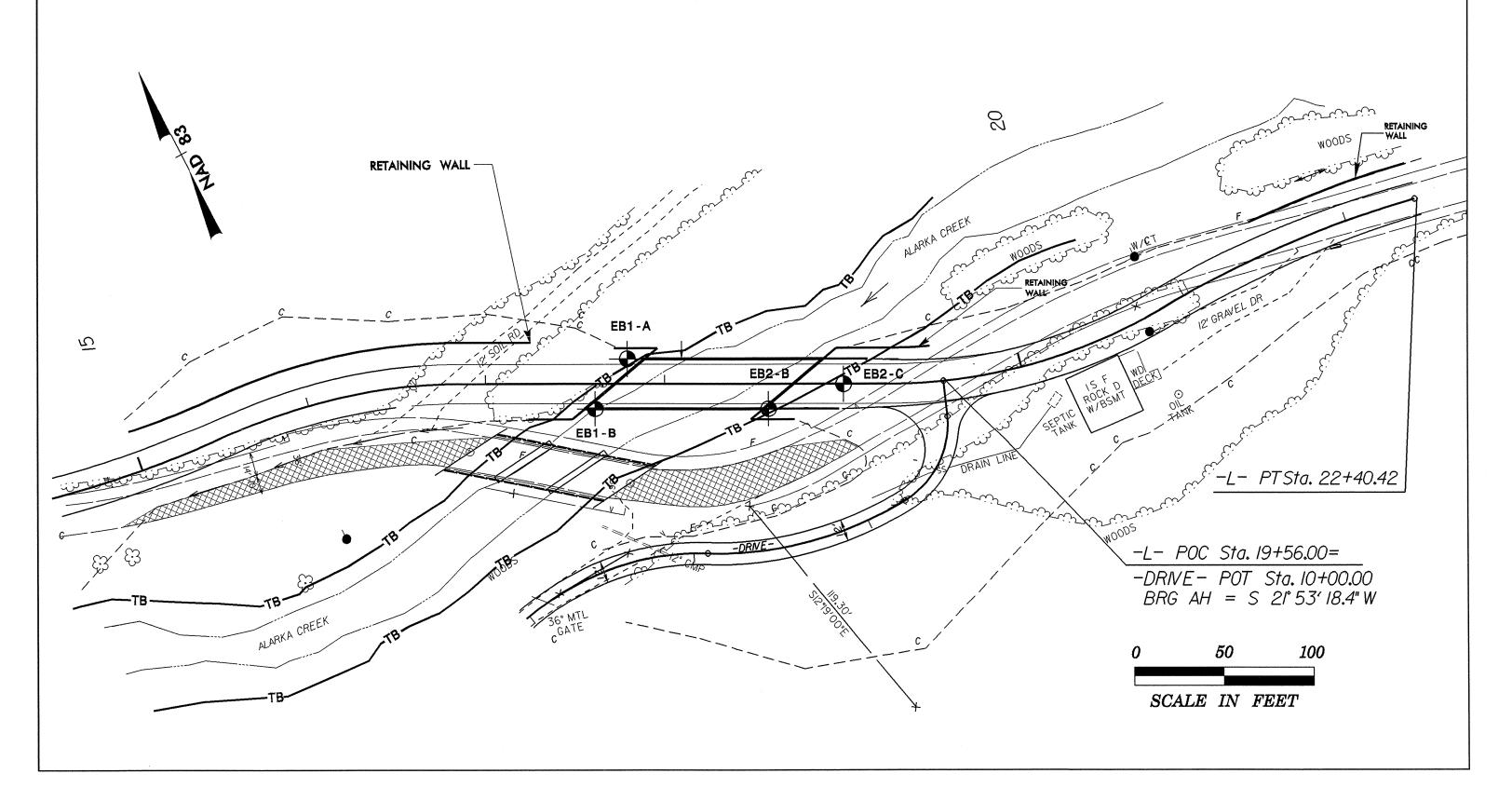
Respectfully Submitted,

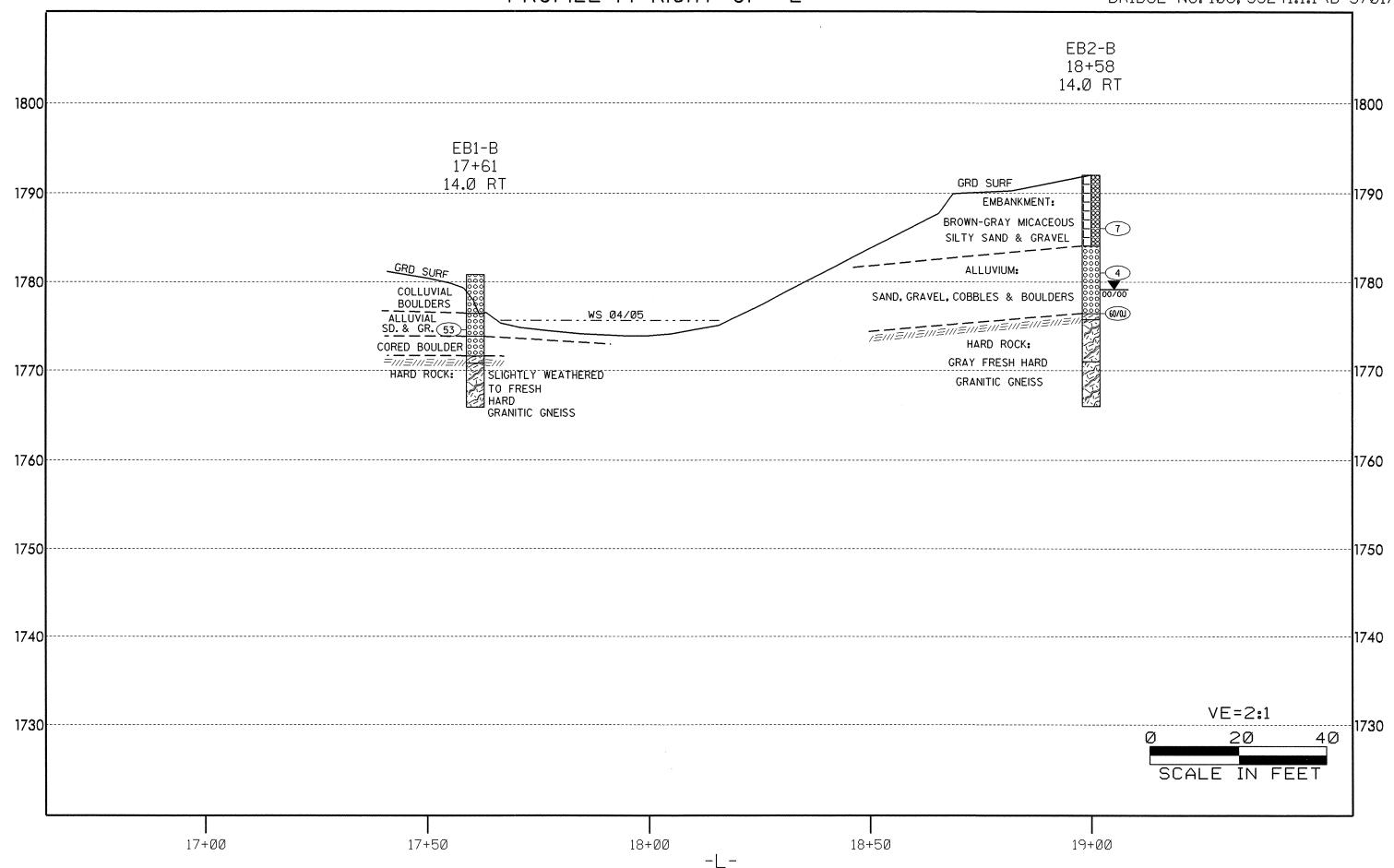
John W. Mann, LG

Project Engineering Geologist

33241.1.1 (B-3701) SWAIN COUNTY

### BRIDGE NO. 106 SITE PLAN





1740

1740

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

										JRING I					
	NO 3324				D B-3			NTY SW			GEOI	<u>.og</u>	IST M.M. HAGAR		
SITE DES	CRIPTION	BRI	DGE I	NO. 10	06 ON	SR-1309	OVER A	LARKA C	REEK					GND WATER	
BORING I	NO EB1-A					HING 0.00				EASTING				0 HR N/A	
ALIGNMI	ENT -L-			I	BORIN	G LOCAT	TON 17+	-89.000		OFFSET 1	4.00ft	LT		24 HR 4.50ft	
COLLAR	ELEV 178	30.25f	t	1	ГОТАІ	DEPTH	14.90ft	s	TART DA	TE 4/20/0	5		COMPLETION DA	ATE 04/20/05	
	ACHINE (			ACK			DRILL	METHOI	SPT CO	RE BORIN	IG		HAMMER TYPE	AUTOMATIC	
	E WATER						DEPTH	TO ROC	K 9.30ft				Log EB1-A, Page 1 of 1		
	T		OW (	СТ	PEN	E	BLOWS PER FOOT			SAMPLE			SOIL AND ROCK		
ELEV	DEPTH	6in	6in	6in	(ft)	0 2	5 5	50 7	'5 1C	d NO	MOI	Ğ	DESCF	RIPTION	
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780.25_	<u> </u>	<b></b>	<u> </u>	<u> </u>			-Ground	Surface							
	F											0000 0000 0000 0000 0000	COLLUVIUM:		
-	‡										_	0000	GRA	AVEL	
_	5.30	2	8	12	1.0		20				Y	0000	ALLUVIUM: BRO	MAIN CDAY CAR	
-	-					X						0000		AVEL	
-	‡											0000	<b>u.</b> 0		
770.00_	上									CORE1			RUN=9.3-10	.3 REC=90%	
	£	İ								CORE2				=90%	
-	Ŧ												RUN=10.3-14	1.9 REC=98%	
765.35	<b></b>		ļ	<b> </b>	-	======			======					=65%	
	t					BORING	TERMIN 5:5' IN F	ADD-DO	► FFEA'-						
-	+		1			''	10.5 IN F	AVDIVO	<u> </u>						
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7 OF 13

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							SHEET OEL_
					CC	 DRE	DATE 8/26/2005 BORING REPORT
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PROJEC	)T: _	33241	<u>.1.1</u>	I. D. NO:	B-37	701	BORING NO: <u>EB1-A</u> GEOLOGIST: <u>J.W. MANN</u>
DESCR	IPTION:		BRIDG	3E NO. 10	)6 ON SR	<u>≀-1309 (</u>	OVER ALARKA CREEK
COUNT	Y:	SWAIN		<u>.</u> '	COLLA	AR ELEV	VATION: <u>1780.3</u> FT.
		DRILL		REC.	RQD.		
ELEV.	1 1	1	RUN	FEET	FEET	SAMP.	FIELD CLASSIFICATION AND REMARKS
(FEET)		MIN./FT.	(FEET)	%	%	#	
1771.0	9.3			0.9	0.9		
	'		1.0	0.5	0.5		
				90	90		FRESH, HARD DARK GRAY MYLONITIC GRANITIC GNEISS.
1770.0	10.3				·	<u></u>	FRACTURE SPACING CLOSE TO MODERATELY CLOSE.
1770.0	10.3				20		FRACURES ARE ALONG VERY THIN FOLIATION @ 40-60°.
			4.6	4.5	3.0		
			4.0	98	65		
1765.4	14.9						
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							CORING TERMINATED AT ELEVATION 1765.4 FT.
DI	RILLER:	D.O. CI	HEEK	Marine		COR	E SIZE: NXWL EQUIPMENT: CME-45 TRACK

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

PROJECT	NO 3324	1.1.1	<del></del>	Tr	D B-3		COUNTY SV				OG	IST M.M. HAGAR	
			DGE I				OVER ALARKA			<u> </u>			GND WATER
	NO EB1-B					IING 0.0			EASTING	0.00			0 HR N/A
ALIGNMI							TION 17+61.000		OFFSET '		RT		24 HR N/A
	ELEV 178	30.83f	t			DEPTH		START DA	TE 4/20/0		COMPLETION D	ATE 04/20/05	
	ACHINE (				<u> </u>		DRILL METHO			HAMMER TYPE AUTOMATIC			
	WATER			1011			DEPTH TO RO			<u>i</u>		Log EB1-B, Page 1 of 1	
		BI	OW (	CT	PEN	3	BLOWS PER FO		SAMPLE	<b>V</b> /	L		ND ROCK
ELEV	DEPTH	l	6in		1 L		25 50	75 10	NO P	<b>▼</b> MOI	gl	DESC	RIPTION
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1780.83	<u> </u>						Ground Surface						
								1			0000	COLLUVIAL	BOULDERS
-	F							1			0000		
-	5.30	6	8	45	1.0		53				0000	Δ1 1 1\/II IM·	GRAY SILTY
-	‡						<b> </b> ×	1	00054		9000		SAND & GRAVEL
-	‡								CORE1	1 10	0000 0000	<u> </u>	VIAL BOULDER
1770.00_	<u> </u>								CORE2				RUN=0.8 HARD
	+		•									ROCK REC=10	% HARD ROCK
1765.93	Ŧ												=63%
-	<del> </del>					BORING	TERMINATED	AT ELEV.					4.9 REC=97% )=72%
	‡					176	\$5.93'JNJ  ARD F	ФСКІІІ			ı	1/00	
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					00		DATE <u>8/26/2005</u>
				•	CO	REI	BORING REPORT
PRQJE	CT: _	33241	.1.1	I. D. NO:	B-37	01	BORING NO: <u>EB1-B</u> GEOLOGIST: <u>J.W. MANN</u>
DESCR	IPTION:	سيسس	BRIDG	SE NO. 10	6 ON SR	-1309 C	VER ALARKA CREEK
COUNT	Y:	SWAIN			COLLA	R ELEV	ATION: <u>1780.8</u> FT. TOTAL DEPTH: <u>14.9</u> FT.
ELEV.	DEPTH (FEET)		RUN (FEET)	REC. FEET	RQD. FEET %	SAMP. #	FIELD CLASSIFICATION AND REMARKS
1773.8			() == · /				7.0-9.2': CORED ALLUVIAL BOULDER
1770.8	10.0		3.0	100	63	3° .	9.2-10.0': HARD ROCK: SLIGHTLY WEATHERED HARD GRANITIC GNEISS.
1770.8	10.0		4.9	4.8 97	3.6 72		DARK GRAY, FRESH, HARD GRANITIC GNEISS WITH MYLONITIZATION. CLOSE TO MODERATELY CLOSE FRACTURING ALONG FOLIATION AT 40-50°.
1765.9	14.9						
			2	·			
		·					
					-		
			<u> </u>			<u></u>	
							CORING TERMINATED AT ELEVATION 1765.9 FT.
D	RILLER:	D.O. CI	HEEK			COR	E SIZE: NXWL EQUIPMENT: CME-45 TRACK

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

						<b>GEOTI</b>	ECHNI	CAL	UNIT B	ORING	<u>LOG</u>					
PROJECT	NO 3324	1.1.1		I	D B-3	701	COUN	NTY SV	VAIN		GEOI	.OG	IST M.M. HAGAR			
SITE DES	CRIPTION	BRII	DGE I				OVER AI	_ARKA	CREEK					GND WATER		
BORING N						HING 0.00				EASTING	0.00			0 HR N/A		
ALIGNME						G LOCAT		00.000		OFFSET	0.00ft			24 HR N/A		
COLLAR		2 03f	 }			DEPTH			START D	ATE 4/18/0	8		COMPLETION D	ATE 04/19/85		
DRILL MA								метно	D SPT C	ORE BORI	NG .		HAMMER TYPE	AUTOMATIC		
SURFACE									CK 17.10f				Log EB2-C, Page 1 of 1			
			.OW	CT	PEN	E	LOWS F			SAMPLE	Y/	Ļ				
ELEV	DEPTH	6in	6in		(ft)	0 2	5 5	0	75 10	NO NO	MOI	Ğ	DESC	RIPTION		
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1792.03	-						Ground	Surface	=			( 5%)				
1790.00_	-							L	1			E	EMBANKME	NT: BROWN		
	<b>_</b>									-		Ė.	OCCASIONA	ILTY SAND WITH L BOULDERS		
-	5.10	2	8	3	1.0					SS-2		Ē	000/10/0/1/	L DOOLD LING		
-	t	1				<u> ::X</u> :::				. 33-2		Ė				
	Ł					/						0000		RAY-BROWN		
-	F		١,	١,	1	- <i> </i> -						00000	SLIGHTLY	MICACEOUS SAND & GRAVEL		
1780.00	11.60	1	1	2	1.0	3				SS-3		0000	FINE-COARSE	SAND & GRAVEL		
	‡									-		0000		•		
-	16.60	73	27		0.5				100			0000				
1773.33	‡	'								<u> </u>			HARD ROCK	(SPT REFUSAL)		
1//3.33		<b>†</b>				BORING	TERMI	ATED	ĀĒĒĒV.							
-	<u> </u>					177	3.33'IN	HARD I	<b>₹фск</b>	<u>.</u> ]						
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NORTH CARC	DLINA DEPARTI	MENT OF 1	ransport <i>a</i>	ATION
GE	OTECHNICAL I	UNIT BORI	NG LOG	

						GEOT				ORING				
PROJECT					D B-3			NTY SW			GEOLO	G	IST M.M. HAGAR	
SITE DES	CRIPTION	BRI	DGE I	NO. 10	06 ON	SR-1309	OVER A	LARKA C	REEK					GND WATER
BORING I	NO EB2-B				NORTI	HING 0.00	)			EASTING	0.00			0 HR N/A
ALIGNMI	ENT -L-			1	BORIN	G LOCAT	ION 18+	-58.000		OFFSET 1	14.00ft R7	Γ		24 HR 12.90ft
COLLAR	ELEV 179	0.86f	t			DEPTH			TART DA	TE 4/18/0	8		COMPLETION DA	ATE 04/19/85
DRILL M.								METHOL	SPT CC	RE BORIN	IG		HAMMER TYPE	AUTOMATIC
SURFACE									K 15.60ff				Log EB2-B, Page 1 of 1	
***************************************			OW (	CT	PEN	E		ER FOO		SAMPLE	▼/L	T	SOIL AN	ID ROCK
ELEV	DEPTH	6in	6in	6in	(ft)	0 2	5 5	50 7	5 10	d NO	MOI G		DESCF	RIPTION
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1790.86	<u> </u>						Ground	Surface			LIS	+		
												000		BROWN-GRAY SILTY SAND &
-	<b>-</b>	_									E	20		VEL
_	5.00	5	4	3	1.0	7				SS-1	L	20		
-	-					-4					Ė	20		
_	10.00	2	2	2	1.0	-					000	20	ALLUVIUM: SA	ND, GRAVEL,
1780.00_	10.00	2	2	2	1.0	*					000	20	COBBLES,	BOULDERS
_	L					[-t					<b>Y</b> 000		•	
_	15.00	10	60		0.6				70		000	20		
_	- 10.00				0.0				>	1 0000			DI IN-16 3.21	.0 REC=98%
-	ļ									CORE1				=98%
4770.00										,				
1770.00										CORE2		计	PLIN=21 0-26	.0 REC=100%
	E													=100%
1764.86	-													
-						BORING	TERMIN	ATED A	ELEV.			T		
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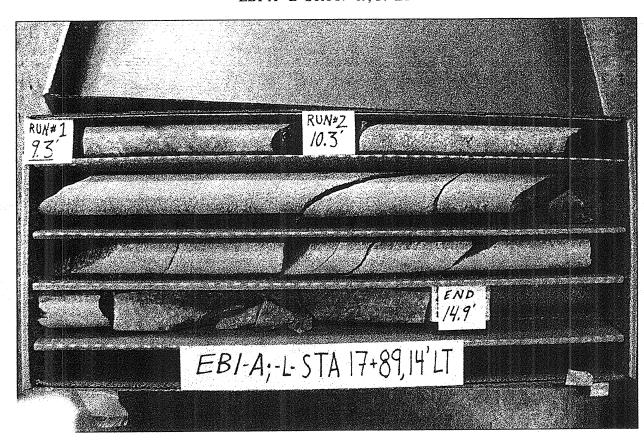
SHEET \_1\_ OE1\_

`					CC	RE	BORING REPORT
PROJEC	CT: '_	33241	.1.1	I. D. NO:	B-37	701	BORING NO:EB2-B GEOLOGIST:J.W. MANN
DESCR	IPTION:	-	BRIDG	SE NO. 10	6 ON SR	-1309 C	OVER ALARKA CREEK
COUNT	Y:	SWAIN			COLLA	R ELE\	/ATION:1790.9 FTTOTAL DEPTH:26.0 FT.
ELEV. (FEET)	DEPTH	1	RUN	REC. FEET %	RQD. FEET %	SAMP.	FIELD CLASSIFICATION AND REMARKS
1774.6		IVIIV.// 1.	4.7	4.6	4.6		
1769.9			4.7	98	98		FRESH, HARD, GRAY GRANITIC GNEISS. FRACTURE SPACING WIDE.
1769.9	21.0		5.0	5.0	5.0		HORIZONTAL CLOSE FOLIATION.
1764.9	26.0			100	100		
					,		
			·				
							- -
	L	4.75%					CORING TERMINATED AT ELEVATION 1764.9 FT.
D	RILLER	D.O. C	HEEK			COR	E SIZE: NXWL EQUIPMENT: CME-45 TRACK

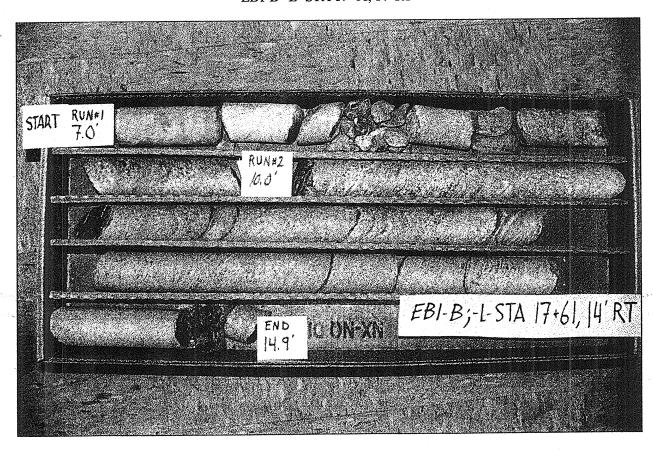
## NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT SOILS TEST REPORT-SOILS LABORATORY

REPORT ON SAMPL	ES OF: Soil	s for Classific	ation									
REI ONI ON SAMI L	ES OI.   SUI	S TOT CHASSIII				• .						
PROJECT:	33241.1.1	CO	UNTY: Sv	vain	,	Owner:						
DATE SAMPLED:	4-5-05		RECEIVED:	1.00.05								
SAMPLED FROM:	Bridge	1 = 1 = 1		LED BY:	J. W. Ma	nn						
SUBMITTED BY:	W. D. Frye		1		2002	STAN	DARD SPI	ECIFICA	TION			
LABORATORY:	Asheville			<u> </u>								
LABUKATUKT.	Ashevine											
			TEST RE	SULTS								
Project Sample No.	SS-1	SS-2	SS-3									
Lab Sample No. A	148848	148849	148850									
HiCAMS Sample #												
Retained #4 Sieve %												
Passing #10 Sieve %	42	94	43									
Passing #40 Sieve %	30	74	33				· ·					
Passing #200 Sieve %	15	25	18	l		L			I			
		M	INUS #10 I	FRACTIO	)N							
Soil Mortar - 100%	<u> </u>	141	IL TON HILD I		<del> `</del>							
Coarse Sand -Ret. #60	41	41	35									
Fine Sand - Ret. #270	30	38	32									
Silt 0.05-0.005 mm %	21	17	23									
Clay < 0.005 mm %	,8	4	10									
Passing # 40 Sieve %												
Passing # 200 Sieve %									<u></u>			
									·			
Liquid Limit	35	36.	34									
Plastic Index	NP	NP	NP						ļ			
AASHTO Classification		A-2-4 (0)	A-1-b (0)									
Quantity									<u> </u>			
Texture												
Station	18+58	19+00	19+00									
Hole No.									-			
Depth (ft) From:	5.0	5.1	11.6									
To:	6.5	6.6	13.1	<u> </u>			·		<del> </del>			
		<u>l'</u>	<u></u>	<u> </u>					1			
Remarks:								<u> </u>				
A-148848 - 148850												
					,							
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CC:												
J. W. Mann				1								
J. W. Mann												

### EB1-A -L- STA 17+89, 14' LT



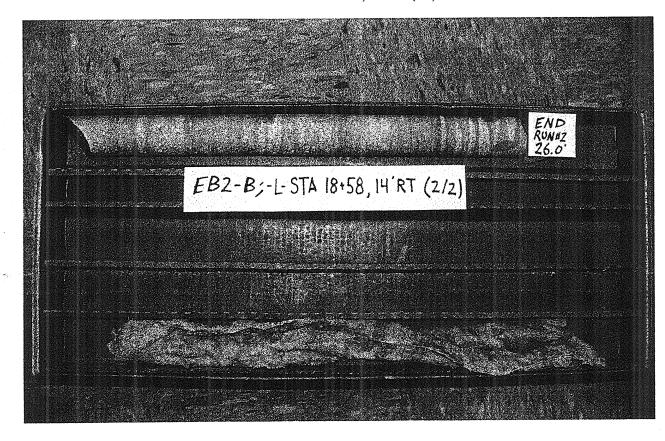
EB1-B -L- STA 17+61, 14' RT



EB2-B -L- STA 18+58, 14' RT (1/2)



EB2-B -L- STA 18+58, 14' RT (2/2)



#### GEOTECHNICAL UNIT FIELD SCOUR REPORT

PROJECT: 33241.1.1 ID: B-3701 COUNTY: SWAIN
DESCRIPTION(1): BRIDGE NO. 106 ON SR-1309 OVER ALARKA CREEK
INFORMATION ON EXISTING BRIDGES Information obtained from:  X field inspection microfilm(Reel: Pos:) X other HYDRAULIC REPORT
COUNTY BRIDGE NO. 106 BRIDGE LENGTH 90' NO. BENTS IN: CHANNEL 2 FLOOD PLAIN 2
FOUNDATION TYPE: TIMBER PILE BENTS ON FOOTINGS
EVIDENCE OF SCOUR(2):
ABUTMENTS OR END BENT SLOPES: NONE
INTERIOR BENTS: BENT ONE: IN FRONT OF FOOTING DUE TO THALWEG
CHANNE GED: NONE
S: NONE
EXISTING SCOUR PROTECTION:
TYPE(3): RIP RAP & BOULDERS
EXTENT(4): PLACED ON ABUTMENT SLOPES
EFFECTIVENESS(5): GOOD
OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): NONE
DESIGN INFORMATION
CHANNEL BED MATERIAL(7) (SAMPLE RESULTS ATTACHED): BOULDERS, SAND
CHANNEL BANK MATERIAL(8) (SAMPLE RESULTS ATTACHED): SAND, GRAVEL, COBBLES, BOULDERS
FOUNDATION BEARING MATERIAL(9): ROCK
FLOOD PLAIN WIDTH(10): ~55' CREEK IS INCISED
FLOOD PLAIN COVER(11): BRAMBLE, TREES

13 DP 13

	01
DESIGN INFORMATION CONT.	2
STREAM IS X DEGRADING AGGRADING (12)	
OTHER OBSERVATIONS AND COMMENTS:	
CHANNEL MIGRATION TENDENCY (13): TOWARD END BENT ONE	
GEOTECHNICALLY ADJUSTED SCOUR ELEVATION (14): N/A: SINGLE SPAN	
SCOUR ELEVATIONS = HARD ROCK ELEVATIONS	
	***************************************
REPORTED BY: J.W. MANN DATE: 4/21/2005	
<u>INSTRUCTIONS</u>	
(1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE GIVING ROUTE NUMBER AND BODY OF WATER CROSSED.	
(2) NOTE ANY EVIDENCE OF SCOUR AT THE EXISTING END BENTS OR ABUTMENTS (UNDERMINING,	
SLOUGHING, SCOUR LOCATIONS, DEGRADATIONS, ETC.)	
<ul> <li>(3) NOTE ANY EXISTING SCOUR PROTECTION (RIP RAP, ETC.)</li> <li>(4) DESCRIBE THE EXTENT OF ANY EXISTING SCOUR PROTECTION.</li> </ul>	
(5) DESCRIBE WHETHER OR NOT THE SCOUR PROTECTION APPEARS TO BE WORKING.	

- NOTE ANY DAMS, FALLEN TREES, DEBRIS AT BENTS, ETC.
- DESCRIBE THE CHANNEL BED MATERIAL: A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS.
- DESCRIBE THE CHANNEL BANK MATERIAL: A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS.
- DESCRIBE THE BANK COVERING (GRASS, TREES, RIP RAP, NONE, ETC.
- (10) GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
- DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
- CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING
- DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE LATERALLY DURING THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS).
- GIVE THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION EXPECTED OVER THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS). THIS CAN BE GIVEN AS AN ELEVATION RANGE ACROSS THE SITE, OR ON A BENT BY BENT BASIS WHERE VARIATIONS EXIST. DISCUSS RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION. THE GEOTECHNICALLY ADJUSTED SCOUR ELEVEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY; CORE RECOVERY PERCENTAGE; PERCENTAGE RQD; DIFFERENTIAL WEATHERING, SHEAR STRENGTH; OBSERVATIONS AT EXISTING STRUCTURES; OTHER TESTS DEEMED APPROPRIATE; AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.